

10
COPY OF PAPERS
ORIGINALLY FILED

1645
RECEIVED

PATENT

Our Docket: P-TB 4927

FEB 07 2002

TECH CENTER 1600/290

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Sem et al.

Serial No.: 09/930,600

Filed: August 15, 2001

For: NMR-SOLVE METHOD FOR RAPID
IDENTIFICATION OF BI-LIGAND
DRUG CANDIDATES

) Examiner: Not yet assigned

)

) Group Art Unit: 1645

)

) I hereby certify that this correspondence
) is being deposited with the United States
) Postal Service as first class mail in an
) envelope addressed to: Commissioner for
Patents, Washington, D.C., 20231, on
October 26, 2001.

)

) By Calvin A. Fan
Calvin A. Fan, Reg. No. 38,444

October 26, 2001
Date of Signature

Commissioner for Patents
Washington, D.C. 20231

Sir:

INFORMATION DISCLOSURE STATEMENT

Applicants respectfully request that the Examiner consider and make of written record the references submitted under 37 C.F.R. § 1.97 and cited by the Examiner in the following parent application(s): U.S. Serial No. 09/587,584, filed June 2, 2000, which is a continuation-in-part of U.S. Serial No. 09/326,435, filed June 4, 1999.

For the Examiner's convenience, submitted herewith is a new PTO-1449 form, listing the references submitted and cited in the parent application(s). Please initial each reference considered and return the form with the next communication to Applicants.


As permitted under 37 C.F.R. § 1.98(d), copies are not enclosed for references previously cited by an Examiner or submitted under 37 C.F.R. § 1.97 in the parent application(s) relied upon for an earlier filing date under 35 U.S.C. § 120.

Inventors: Sem et al.
Serial No.: 09/930,600
Filed: August 15, 2001
Page 2

No fee is deemed necessary in connection with the filing of this Information Disclosure Statement. However, if any fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-0370.

Respectfully submitted,

October 26, 2001
Date



Calvin A. Fan
Registration No. 38,444
Telephone: (858) 535-9001
Facsimile: (858) 535-8949

CAMPBELL & FLORES LLP
4370 La Jolla Village Drive
7th Floor
San Diego, California 92122
USPTO CUSTOMER NO. 23601

RECEIVED

FEB 17 2002

Form PTO 1449 FEB 3 4 2002 PATENT & TRADEMARK OFFICE	US Department of Commerce Patent and Trademark Office	ATTY DOCKET NO: P-TB 4927	SERIAL NO. 09/930,500
	APPLICANT: Sem et al.		
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		FILING DATE: August 15, 2001	GROUP: 1645

U.S. PATENT DOCUMENTS

EXAM. INITIALS	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
	5,658,739	8/19/97	Virgil L. Woods Jr.			
	5,693,515	12/2/97	Clark et al.			
	5,698,401	12/16/97	Fesik et al.			
	5,804,390	09/08/98	Fesik et al.			

FOREIGN PATENT DOCUMENTS

EXAM. INITIALS	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION (YES/NO)
	97/18469	22.05.97	WO			
	97/18471	22.05.97	WO			
	98/48264	29.10.98	WO			

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages)

	Appelt et al., "Design of enzyme inhibitors using iterative protein crystallographic analysis," <u>J. Med. Chem.</u> , 34:1925-1934 (1991).
	Borman, "Advance in NMR of Macromolecules," <u>Chem. & Eng. News</u> , 76:55-56 (1998).
	Chen et al., "Biased combinatorial libraries: novel ligands for the SH3 domain of phosphatidylinositol 3-kinase," <u>J. Am. Chem. Soc.</u> , 115:12591-12592 (1993).
	Chen et al., "Mapping of the Binding Interfaces of the Proteins of the Bacterial Phosphotransferase System, HPr and IIA ^{glc} ," <u>Biochemistry</u> , 32:32-37 (1993).

EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO 1449 FEB 04 2002 PATENT & TRADEMARK OFFICE	US Department of Commerce Patent and Trademark Office	ATTY DOCKET NO: P-TB 4927	SERIAL NO. 09/930,600
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		APPLICANT: Sem et al. FILING DATE: August 15, 2001	GROUP: 1645

		Combs et al., "Protein structure-based combinatorial chemistry: discovery of non-peptide binding elements to Src SH3 domain," <u>J. Am. Chem. Soc.</u> , 118:287-288 (1996).
		Davis et al., "Alterations in chemical shifts and exchange broadening upon peptide boronic acid inhibitor binding to α -lytic protease," <u>J. Biomolecular NMR</u> , 10:21-27 (1997).
		Fejzo et al., "The SHAPES strategy: an NMR-based approach for lead generation in drug discovery," <u>Chem. & Biol.</u> , 6(10):755-769 (1999).
		Hajduk et al., "High-throughput nuclear magnetic resonance-based screening," <u>J. Med. Chem.</u> , 42(13):2315-2317 (1999).
		Hajduk et al., "Discovery of Potent Nonpeptide Inhibitors of Stromelysin Using SAR by NMR," <u>J. Am. Chem. Soc.</u> , 119:5818-5827 (1997)
		He et al., "Design and synthesis of new leads for PKC bisubstrate inhibitors," <u>Bioorganic & Medicinal Chemistry Letters</u> , 4:2845-2850 (1994)
		Hrovat et al., "Backbone dynamics of oxidized and reduced <i>D. vulgaris</i> flavodoxin in solution," <u>J. Biomolecular NMR</u> , 10:53-62 (1997)
		Labrou et al., "Molecular modelling for the design of chimaeric biomimetic dye-ligands and their interaction with bovine heart mitochondrial malate dehydrogenase," <u>Biochem. J.</u> , 315:695-703 (1996)
		Labrou et al., "Oxaloacetate Decarboxylase: On the Mode of Interaction with Substrate-Mimetic Affinity Ligands," <u>Arch. Biochem. Biophys.</u> , 321(1):61-70 (1995).
		Labrou et al., "The Interaction of <i>Candida boidinii</i> Formate Dehydrogenase with a New Family of Chimeric Biomimetic Dye-Ligands," <u>Arch. Biochem. Biophys.</u> , 316(1):169-178 (1995).

EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO 1449 US Department of Commerce Patent and Trademark Office FEB 04 2002 PATENT & TRADEMARK OFFICE	ATTY DOCKET NO: P-TB 4927	SERIAL NO. 09/930,600
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	APPLICANT: Sem et al. FILING DATE: August 15, 2001	GROUP: FEB 07 2002 1645 RECEIVED TECH CENTER 1600/290X

	Labrou et al., "Biomimetic-dye affinity chromatography for the purification of mitochondrial L-malate dehydrogenase from bovine heart," <u>J. Biotechnol.</u> , 45:185-194 (1996).
	Lee et al., "Rapid corepressor exchange from the trp-repressor/operator complex: an NMR study of [ul-13C/15N]-L-tryptophan," <u>J. Biomol. NMR</u> , 5(4):367-375 (1995)
	LeMaster, "Deuteration in protein proton magnetic resonance," <u>Methods Enzymol.</u> , 177:23-43 (1989)
	Moore, "NMR techniques for characterization of ligand binding: Utility for lead generation and optimization in drug discovery," <u>Biopolymers</u> , 51(3):221-243 (1999).
	Moore, "NMR screening in drug discovery," <u>Curr. Opin. Biotechnol.</u> , 10(1):54-58 (1999).
	Morken et al., "Exploring the leucine-proline binding pocket of the Src SH3 domain using structure-based, split-pool synthesis and affinity-based selection," <u>J. Am. Chem. Soc.</u> , 120:30-36 (1998)
	Muchmore et al., "Expression and nitrogen-15 labeling of proteins for proton and nitrogen-15 nuclear magnetic resonance," <u>Methods Enzymol.</u> , 177:44-73 (1989)
	Pervushin et al., "Attenuated T ₂ relaxation by mutual cancellation of dipole-dipole coupling and chemical shift anisotropy indicates an avenue to NMR structures of very large biological macromolecules in solution," <u>Proc. Natl. Acad. Sci. USA</u> , 94:12366-12371 (1997)
	Pervushin et al., "Transverse Relaxation-Optimized Spectroscopy(TROSY) for NMR Studies of Aromatic Spin Systems in ¹³ C-Labeled Proteins," <u>J. Am. Chem. Soc.</u> , 120:6394-6400 (1998)

EXAMINER	DATE CONSIDERED
-----------------	------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO 1449 US Department of Commerce Patent and Trademark Office FEB 04 2002 PATENT & TRADEMARK OFFICE	ATTY DOCKET NO: P-TB 4927	SERIAL NO. 09/930,600
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	APPLICANT: Sem et al. FILING DATE: August 15, 2001	RECEIVED FEB 07 2002 1645 TECH CENTER 1600/20

		Reilly and Fairbrother, "A novel isotope labeling protocol for bacterially expressed proteins," <u>J. Biomolecular NMR</u> , 4:459-462 (1994)
		Reinstein et al., "Fluorescence and NMR investigations on the ligand binding properties of adenylate kinases," <u>Biochem.</u> , 29:7440-7450 (1990)
		Rozwarski et al., "Modification of the NADH of the isoniazid target (InhA) from <i>mycobacterium tuberculosis</i> ," <u>Science</u> , 279:98-102 (1998)
		Salzmann et al., "TROSY-type Triple-Resonance Experiments for Sequential NMR Assignments of Large Proteins," <u>J. Am. Chem. Soc.</u> , 121:844-848 (1999).
		Scheffzek et al., "Crystal structure of the complex of UMP/CMP kinase from <i>Dictyostelium discoideum</i> and the bisubstrate inhibitor P ¹ -(5'-Adenosyl) P ⁵ -(5'-Uridyl) pentaphosphate (UP ₅ A) and Mg ²⁺ at 2.2 Å: implications for water-mediated specificity," <u>Biochem.</u> , 35:9716-9727 (1996)
		Sem and Kasper, "Geometric relationship between the nicotinamide and isoalloxazine rings in NADPH-cytochrome P-450 oxidoreductase: implications for the classification of evolutionarily and functionally related flavoproteins," <u>Biochem.</u> , 31:3391-3398 (1992)
		Sem et al., "NMR Spectroscopic Studies of the DNA-binding Domain of the Monomer-binding Nuclear Orphan Receptor, Human Estrogen Related Receptor-2," <u>J. Biological Chem.</u> , 272(29):18038-18043 (1997)
		Sem and Coutts, "Accelerating Drug Discovery at Triad Biotechnology," <u>Solutions</u> , pp. 9 (1998).
		Sem and Coutts, "Accelerating Drug Discovery at Triad Biotechnology," <u>Solutions</u> , pp. 11 (1998).

EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO 1449 FEB 04 2002 PATENT & TRADEMARK	US Department of Commerce Patent and Trademark Office	ATTY DOCKET NO: P-TB 4927	SERIAL NO. 09/930,600
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		APPLICANT: Sem et al. FILING DATE: August 15, 2001	GROUP: 1645 TECH CENTER 1600/29

RECEIVED

FEB 07 2002

		Shuker et al., "Discovering High-Affinity Ligands for Proteins: SAR by NMR," <u>Science</u> , 274:1531-1534 (1996)
		van Nuland et al., "The NMR determination of the IIA ^{mt1} binding site on HPr of the <i>Escherichia coli</i> phosphoenol pyruvate-dependent phosphotransferase system," <u>FEBS</u> , 315:11-15 (1993)
		Venters et al., "High-level ² H/ ¹³ C/ ¹⁵ N labeling of proteins for NMR studies," <u>J. Biomol. NMR</u> , 5:339-344 (1995)
		Wemmer and Williams, "Use of nuclear magnetic resonance in probing ligand-macromolecule interactions," <u>Methods Enzymol.</u> , 239:739-767 (1994).
		Wüthrich, "The Second decade-into the third millenium," <u>Nature Structural Biology</u> , Nature Structural Biology NMR Supplement: 492-495 (1998)
		Yamazaki et al., "A suite of triple resonance NMR experiments for the backbone assignment of ¹⁵ N, ¹³ C, ² H labeled proteins with high sensitivity," <u>J. Am. Chem. Soc.</u> , 116:11655-11666 (1994)

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages)

		Li et al., "The inter-ligand Overhauser effect: A powerful new NMR approach for mapping structural relationships of macromolecular ligands," <u>J. Biomol. NMR</u> , 15:71-76 (1999).
		Medek et al., "The Use of Differential Chemical Shifts for Determining the Binding Site Location and Orientation of Protein-Bound Ligands," <u>J. Am. Chem. Soc.</u> , 122:1241-1242 (2000).

EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.